

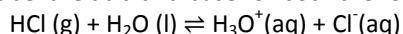
T08D01 – (8.1) Theories of Acids and Bases Notes

Name

1. 8.1.1 Define acids and bases according to the Brønsted–Lowry and Lewis theories.(1)
2. 8.1.2 Deduce whether or not a species could act as a Brønsted–Lowry and/or a Lewis acid or base. (3)
3. 8.1.3 Deduce the formula of the conjugate acid (or base) of any Brønsted–Lowry base (or acid). (3)

	Focus (theory)	Acid Definition	Base Definition
Brønsted–Lowry			
Lewis			
Arrhenius			

- a. According to Brønsted–Lowry, who label the acid and base for both the forward and reverse reactions:



- b. What is a conjugate acid base pair?
- c. What does it mean for a substance to be amphoteric?
- d. Show that water is amphoteric by labelling the conjugate pairs for the reaction of water with:
- i. hydrochloric acid:
 - ii. ammonia:
- e. How do the titles of weak/strong and acid/base change in an equation regarding conjugate pairs?
- f. What does the proticity of acids mean?
- i. Give an example of each, and provide an equation for the deprotonation (1 at a time):
 1. Monoprotic:
 2. Diprotic:
 3. Triprotic:
- g. Show how HSO_3^- can act as both an acid and a base:

h. What is a dative bond?

i. Show how NH_3 can form a dative bond with

1. H^+

2. BF_3

ii. Many transition metals allow for the formation of dative bonds through their empty 3d orbitals, draw an example of $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$:

i. Provide a diagram for how acids react with different substances:

j. Show the difference between an alkali and a base:

k. How is it that all Brønsted–Lowry acids are Lewis acids, but the reverse cannot be said?